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EXAMINER	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 08/715,724
Filing Date: September 19, 1996
Appellant(s): WILSON ET AL.

Bryan Davidson
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed February 4, 2005.

GB

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

This appeal involves claim 2, 3, 9, 10, and 23. Appellant states that the status for appeal of claim 10 is unclear. Specifically, appellant asserts that claim 10 has not been rejected over prior art, but was only objected to in the Final Office Action. Said objection was overcome by the Amendment After Final filed November 12, 2004, wherein the dependency of claim 10 was changed from cancelled claim 22 to claim 2. As such, box 7 of the Advisory Action mailed November 19, 2004 stated said Amendment After Final would be entered and, for the purposes of appeal, the new status of claim 10 was indicated as rejected. The prosecution history clearly indicates claim 10 is rejected under 103 over the cited Lin, Lijten, and Hoyt references along with claims 2, 3, and 9, as set forth in section 4 of the Final Rejection. Note prior to its dependency upon cancelled claim 22, claim 10 depended upon claim 9 and was rejected along with 2, 3, and 9 under 103 over the cited Lin, Lijten, and Hoyt references (see non-final Office Action mailed June 25, 2003, section 4). Also, note that the limitation of claim 10 (i.e., amine end group concentration of the core nylon of between 20-50 meq/kg) has been clearly addressed

during prosecution as being taught by the cited Lin reference (i.e., Lin, col. 5, lines 5-17 teaches nylon 6,6 core polymer having an amine end group concentration of about 50 meq/kg). Therefore, the record is clear that claim 10 is rejected under 103 as being obvious over the cited Lin, Lijten, and Hoyt references.

(4) Status of Amendments

The appellant's statement of the status of amendments contained in the brief is incorrect. At the time of filing of the present Appeal Brief (i.e., February 4, 2004), the Amendment After Final filed November 12, 2004 had been entered as indicated by the Advisory Action mailed November 19, 2004.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. The changes are as follows: Claim 10 is included with the rejection of claims 2, 3, 9, and 23 under 35 USC 103(a) as being unpatentable over the cited Lin, Lijten, and Hoyt references.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

US 5,447,794	Lin	09/1995
US 5,468,555	Lijten et al.	11/1995
US 5,340,886	Hoyt et al.	08/1994

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 2, 3, 9, 10, and 23 stand rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,447,794 issued to Lin in view of US 5,468,555 issued to Lijten et al., and in further view of US 5,340,886 issued to Hoyt et al.

Appellant claims a carpet comprising a backing material and stain resistant sheath/core bicomponent face fibers with non-round cross-sections affixed to said backing material. The face fibers comprise a core of a first polyamide component and a sheath of a second polyamide component comprising about 3 to 9 % of the fiber and substantially or completely covering said core. The second polyamide component is limited to stain resistant polyamides according to the claimed formulas, which encompass nylon 6,10, nylon 6,12, nylon 11, and nylon 12. Appellant also limits the fiber to having specified values of the properties of "percent steam heatsetting shrinkage value" and "staining depth." The sheath polyamide has a concentration of titratable amino end-groups (AEG) of less than 30 meq/kg, preferably less than 5 meq/kg, while the core polyamide has an AEG concentration of between 5 and 100 meq/kg, preferably between 20 and 50 meq/kg. In a preferred embodiment the second polyamide is substantially sulphonate-free.

The Lin patent is directed to sheath-core polyamide filaments useful in carpet constructions that are resistant to staining by coffee and acid dyes common in beverages. The sheath component is comprised of nylon 6,12, nylon 12, nylon 6,10, or nylon 11 and the core may be nylon 6,6, nylon 6, or copolymers thereof. (Title, Abstract, and col. 1, lines 5-11 and 42-64). The weight ratio of the sheath component to the core component is in the range of 10:90 to 80:20 (col. 1, lines 35-42). In one working example, Lin teaches a stain resistant bicomponent fiber comprising a nylon 6,12 sheath and a nylon 6,6 core polymer, wherein said core polymer has an AEG concentration of about 50 meq/kg (col. 5, lines 5-17).

Thus, Lin teaches the limitations of appellant's claims with the exceptions (a) the sheath component ranges from about 3 to 9%, (b) the "percent steam heatsetting shrinkage value," (c) the "staining depth," (d) the non-round cross-section, (e) the claimed AEG concentration of the sheath, and (f) the sulphonate-free second polyamide (i.e., sheath).

With respect to the claimed sheath amount, Lin teaches an amount of 10%. However, it is well known in the art to employ sheath amounts in the range of 3-9%. For example, Lijten teaches yarns formed from sheath-core filaments that are designed to have a uniform sheath which permits the use of lower sheath volumes (abstract). Lijten teaches that even as little as 7% sheath or less is effective following their techniques (col. 2, lines 15-56). Additionally, Lijten discloses that nylon sheath/nylon core bicomponent fibers can be used as face fibers for carpets (col. 3, lines 13-18). Furthermore, Lijten teaches that the right choice for the sheath material significantly improves the flammability and/or soiling characteristic of the carpets made from the inventive filaments (col. 4, lines 21-25).

Thus, one skilled in the art in possession of both Lin and Lijten would have been motivated to modify the Lin fibers by applying the Lijten techniques of producing more uniform sheaths. Specific motivation includes obtaining improved results with lesser amount of sheath component, and hence, cost of sheath component without incurring any adverse effects on performance. Additionally, Lijten teaches another benefit to be improved dyeability of the bicomponent fiber when the core component is poorly dyeable (col. 4, lines 12-16).

Regarding the non-round cross-section, one example of Lin exemplifies a round cross-sectional shape. However, it is well-known in the art to have non-round cross-sectional shapes, particularly trilobal cross-sections, even in bicomponent carpet filaments for the purposes of increasing bulk and soiling characteristics among other properties. For example, Lijten teaches trilobal filaments are desirable in carpet fibers (col. 3, lines 10-21). Hence, it would have been instantly obvious to one of ordinary skill in the art to practice the conceptual invention of Lin with trilobal filaments, motivated by the expectation of providing a higher quality carpet due to increased yarn bulk and soiling properties.

With respect to the claimed AEG concentration of the sheath component and the sulphonate-free second polyamide, the cited Hoyt reference is relied upon. As previously noted, Lin teaches a nylon core AEG concentration of about 50 meq/kg, which meets appellant's limitation of between 5 and 100 meq/kg, preferably between 20 and 50 meq/kg. However, Lin is silent with respect to the AEG concentration of the sheath polyamide. As such, one must look to the prior art for guidance on suitable values. It is well known in the art that the titratable AEG concentration correlates to the number of available functional groups for bonding to acid dye or

acidic food stains. A relatively high value would make the polyamide easily dyeable by acid dyes or easily stained by food or beverages containing acid dyes (i.e., coffee and Kool-Aid®).

For example, Hoyt teaches that when the free amine end groups of a polyamide fiber are decreased, the dyeability of said fiber by acid dyes or food stains is reduced (col. 1, lines 20-24 and lines 34-41 and col. 2, lines 22-34). Additionally, Hoyt discloses acid-dye resistant polyamide fibers comprising a polyamide polymer having its AEG's blocked with a chemical blocking agent (abstract). The chemical blocking agent may be a lactone, such as caprolactone or butyrolactone (col. 5, lines 15-42). Suitable polyamides are nylon 6, nylon 6,6, nylon 6,12, and nylon 12 (col. 4, lines 26-29). By blocking the AEG's with a blocking agent the available acid dye sites are reduced, thereby making the fiber acid dye resistant (col. 6, lines 38-47). The nylon fibers treated with a blocking agent have titratable AEG concentrations of less than 25 meq/kg, while lightly colored nylons may have concentrations in the range of 2-20 meq/kg (col. 7, lines 3-17). Specifically, Hoyt's working examples 2-7 show non-sulphonated nylon 6 that is treated with various amounts of butyrolactone to produce AEG concentrations ranging from 12-33 meq/kg, while examples 16-21 show a sulphonated nylon 6 treated with butyrolactone produces AEG concentrations ranging from 8-24 meq/kg (col. 9, lines 45-68 and col. 10, Table 1). Thus, although the sulphonated nylon may be a preferred embodiment, Hoyt clearly teaches non-sulphonated nylons having AEG concentrations of less than 30 meq/kg. Therefore, it would have been obvious to one skilled in the art to employ a nylon having a low AEG concentration as taught by Hoyt for the sheath component of the Lin invention since Lin's intent is to provide a stain resistant carpet fiber. Motivation to do so would be to further enhance the Lin fiber's resistance to acid-dyes by blocking the amine end group acid dye sites.

With respect to the claimed properties, Lin is silent with respect to shrinkage, while the staining tests provided by Lin are not performed in the same manner as those of the present invention. As such, it is not possible to compare the values of staining given by Lin with those instantly claimed. However, the mere recitation of properties absent in the prior art does not necessarily predicate patentability especially where, as here, the prior art of Lin, Lijten, and Hoyt teaches appellant's preferred embodiment (i.e., a carpet made from a trilobal sheath-core filament comprising about 7% sheath of nylon 6,12 or nylon 6,10 and a nylon 6 or 6,6 core, wherein the sheath has an AEG concentration of less than 30 meq/kg and a core AEG concentration of about 50 meq/kg). Since the chemistry and structure of the carpet claimed is clearly met by the teachings of the prior art, the examiner finds the properties claimed in addition thereto to be met by the prior art carpets. This reasoning is based on the fact that the properties claimed are dependent upon the materials from which they are made and the same materials and structures are used for appellant's preferred embodiments as for the cited prior art.

Therefore, claims 2, 3, 9, 10, and 23 are rejected as being obvious over the cited Lin, Lijten, and Hoyt references.

(11) Response to Argument

Appellant traverses the above rejection by asserting the examiner is employing hindsight to arrive at the obviousness rejection (Brief, paragraph spanning pages 6-7). Specifically, appellant agrees with the fact that Lin teaches in Example 2 an AEG concentration of about 50 meq/kg for the nylon 6,6 core polymer (Brief, page 6, 1st paragraph and paragraph spanning pages 6-7). Appellant also agrees that Lin is silent with respect to an AEG

concentration for the sheath nylon (Brief, paragraph spanning pages 6-7). Yet, appellant believes that due to the silence of Lin with respect to the sheath AEG concentration and due to the high AEG concentration of the core nylon, one skilled in the art would not obviously employ a low AEG concentration for the sheath (Brief, paragraph spanning pages 6-7). In response to appellant's argument of improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In this case, the Hoyt reference clearly establishes that the relationship between AEG concentrations and the dyeability or stainability of nylon is well known in the art. Thus, one skilled in the art would readily recognize that if the goal is to produce a stain-resistant nylon bicomponent fiber, as is Lin's goal, that a low AEG concentration in the sheath component is beneficial, despite Lin's silence thereto.

Appellant also relies upon the Board's previous decision (November 21, 2002) for this application as an opinion that Lin's silence with regard to the sheath AEG concentration is equivalent to indifference by Lin or of no importance at all to Lin (Brief, page 7, 1st paragraph and paragraph spanning pages 7-8). In said decision (Board decision, paragraph spanning pages 7-8), the Board stated:

> The examiner has not established that the applied prior art [Lin in view of Lijten] discloses, or would have fairly suggested to one of ordinary skill in the art, providing a sheath having less than 30 milliequivalents per kilogram of titratable amino end groups either by blocking amino end groups or by another method. The examiner, therefore, has not carried the burden of establishing a *prima facie* case of obviousness....

Since claims 2, 3, 9, and 10 included this limitation of less than 30 meq/kg for the sheath component, the Board accordingly reversed the rejection of said claims, while affirming the rejection of the claims without an AEG concentration limitation. The examiner agrees with said decision, but notes that the current rejection is not based upon Lin and Lijten alone anymore. Additionally, is the examiner's opinion that the Board was not suggesting that Lin was indifferent to the AEG concentration of the sheath component or that Lin taught away from employing a low value for said concentration. Rather, the Board merely concluded appropriately that a *prima facie* case of obviousness had not been properly presented for claims 2, 3, 9, and 10 over the Lin and Lijten references alone.

Appellant also asserts the examiner has put "the cart before the proverbial mule" when arguing that one would turn to Hoyt for a teaching of a low AEG concentration (Brief, paragraph spanning pages 7-8). Specifically, appellant states "before one would be directed to low AEG polymers, one would need to recognize that, in the context of a bicomponent fiber, a sheath component of low AEG polymers would at all be helpful" (Brief, paragraph spanning pages 7-8). In response, it is reiterated that one of ordinary skill in the art understands the relationship between AEG concentrations and the dyeability or stainability of nylon fibers. The Hoyt references supports this fact in its *"Background of the Invention"* teaching that when the free amine end groups of a polyamide fiber are decreased, the dyeability of said fiber by acid dyes or food stains is reduced (col. 1, lines 20-24 and lines 34-41 and col. 2, lines 22-34). Additionally, one skilled in the art readily understands the structural relationship of sheath/core fibers and sheath's function of surface area available for dyeing and/or staining. [Note Lijten's teaching that a dyeable sheath can improve dyeability of the fiber when a core component is poorly

dyeable (col. 4, lines 12-16).] Hence, one of ordinary skill in the art would readily recognize that a sheath having a low AEG concentration would be beneficial to Lin's goal of providing a sheath/core nylon fiber that is resistant to stains by acid dyes.

With respect to claim 23, appellant contends the examiner has "apparently overlooked" the requirement of that the sheath component be substantially sulphonate free (Brief, 1st paragraph, page 8). To the contrary, the Final Rejection (first mailed December 19, 2003 and remailed June 17, 2004) states the following in section 5, page 3:

> Hoyt teaches a method of making an acid dye stain resistant nylon fiber by blocking available amine end groups with a chemical blocking agent (abstract). The chemical blocking agent may be a lactone, such as caprolactone or butyrolactone (col. 5, lines 15-42). **Hoyt's working examples 2-7 show non-sulphonated nylon 6 that is treated with various amounts of butyrolactone to produce AEG concentrations ranging from 12-33 meq/kg**, while examples 16-21 show a sulphonated nylon 6 treated with butyrolactone produces AEG concentrations ranging from 8-24 meq/kg (col. 9, lines 45-68 and col. 10, Table 1). **Thus, although the sulphonated nylon may be the preferred embodiment, Hoyt clearly teaches non-sulphonated nylons having AEG concentrations of less than 30 meq/kg.** [Emphasis added.]

Thus, it is appellant that "apparently overlooks" the examiner's rejection of the non-sulphonated limitation of claim 23.

Appellant also traverses the above rejection on the basis of the Blackwell Declaration which asserts that no information pertaining to the sheath polymer disclosed by Lin could be located by conducting internet searches (Brief, footnote 10, page 8). From this appellant concludes that the sheath polymer employed by Lin (i.e., DuPont's Engineering Resin FE3643) does not appear to be commercially available and hence, the Lin disclosure is not enabled for one of ordinary skill in the art (Brief, 2nd paragraph, page 8 and paragraph spanning pages 8-9). In response, it is strongly believed that an internet search, no matter how extensive, is by no means

conclusive of commercial availability of a product, much less a standard for enablement of a patent. As such, the examiner reiterates that the Blackwell Declaration is not evidence of unobviousness and is not sufficient to overcome the rejection at hand.

To summarize, the examiner contends the presently claimed invention is obvious over the cited Lin, Lijten, and Hoyt references. The Board of Appeals previously affirmed the rejection over Lin in view of Lijten for the claims without the AEG concentration limitation, but reversed the rejection of the claims reciting said limitation. Prosecution was then reopened to add the Hoyt reference to the Lin and Lijten rejection since it was believed that the AEG concentration limitations did not patentably distinguish the present invention from the prior art. Appellant traverses this rejection by asserting that Lin is indifferent to the AEG concentration for the nylon sheath, or better yet, said AEG concentration is of "no importance at all" to Lin (Brief, page 7, 1st paragraph, paragraph spanning pages 7-8, and paragraph spanning pages 8-9). The examiner disagrees since the relationship of AEG concentrations to acid dyeability and stainability are well known in the art and evidenced by the Hoyt reference. As such, Lin's silence with respect to the AEG concentration of the sheath may just be indicative of what is known in the art and hence, not necessarily to disclose. Additionally, it is argued that it would have been readily obvious to one skilled in the art to employ a nylon sheath component having a low AEG concentration in order to achieve Lin's goal of a bicomponent nylon fiber resistant to staining by acid dyes. Furthermore, with respect to claim 23, appellant has ignored the Hoyt teaching of non-sulphonated nylon. In conclusion, the examiner has presented a proper *prima facie* case of obviousness, but the appellant has failed to successfully rebut said case or to present any

evidence of nonobviousness sufficient to overcome said rejection. Therefore, it is respectfully requested the rejection be affirmed by the Board.

Respectfully submitted,

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cj
March 7, 2005

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